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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Sylvestre Marillonnet

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EXAMINER

ZHENG, LI

ART UNIT

PAPER NUMBER

1638

MAIL DATE

DELIVERY MODE

04/30/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,998	Applicant(s) MARILLONNET ET AL.	
	Examiner LI ZHENG	Art Unit 1638	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 9-11 and 18-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 12-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/21/2006; 1/22/2009</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-33 are pending.

Election/Restrictions

2. Applicant's election with traverse of Group I, claims 1-8 and 12-17, in the reply filed on 1/22/2009 is acknowledged.

Applicants argue that Lough et al. do not anticipate claim 1 and claim 25 in that Lough et al. do not teach that precursor of the RNA amplicon contains one or more introns (response, page 3, 1st paragraph).

The office contends that the limitation that precursor of the RNA amplicon contains one or more introns is not recited in all the invention groups, therefore is not part of the special technical feature linking groups I-IX.

Claims 9-11 and 18-33 are withdrawn for being drawn to non-elected inventions.

Claims 1-8 and 12-17 are examined on the merits.

The requirement is still deemed proper and is therefore made FINAL.

Specification

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3. The disclosure is objected to because it contains an embedded hyperlink and/or other form of browser-executable code. Applicant is required to delete the embedded hyperlink and/or other form of browser-executable code. See MPEP § 608.0. See, for example, pages 29, 38 and 44.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 15-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 15, the recitation "preferably a Solanacea plant, more preferably a Nicotiana plant, most preferably tobacco" renders the claim indefinite. It is unclear if the recitation is considered as a limitation or not. The metes and bounds are not clear.

In claim 16, the recitation "a virual protein necessary or useful for cell-to-cell movement of said RNA replicon of said helper replicon" renders the claim indefinite. It is unclear what the recitation encompasses because help replicon is incapable of systemic movement as set forth in claim 1. The metes and bounds are not clear.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-8 and 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lough et al (2001, Virology 288:18-28) in view of Ainley et al. (U.S. Patent No. 6,384,207).

Claims of 1-8 and 12-16 are drawn to a system for replicating and expressing a sequence of interest in a plant comprising i) a DNA precursor of an RNA replicon derived from a plus-sense single stranded RNA virus comprising at least one sequence of interest and one or more intron; and ii) a DNA precursor of a helper replicon that is incapable of systemic movement in a plant both in the presence and in the absence of said RNA replicon and that is capable of expressing in a plant one or more protein necessary for systemic movement of said RNA replicon; whereby said RNA replicon is capable of replicating and expressing said sequence of interest in a plant but unable to move systemically in a plant in the absence of said one or more proteins expressed by said helper replicon; or wherein that said helper replicon is incapable of systemic movement in a plant is due to the absence of a functional origin of viral particle assembly; or wherein said helper replicon is capable of expressing in a plant a coat protein or a movement protein necessary for said systemic movement of said RNA

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replicon; or wherein said RNA replicon cannot express a movement protein necessary for said systemic movement of said RNA replicon; or wherein said plant is a tobacco plant; or wherein said replicon lacks a coat protein and said sequence of interest is larger than 1 kb.

Lough et al. teach a DNA encoding a movement-deficient WCIMV mutant is cotransformed with another DNA encoding the movement proteins TGB1-3 (Figure 2, Table 1). Lough et al. teach the replicon lacks of a coat protein (Figure 2). The co-transformation of both DNAs allows systemic infection of the WCIMV in the tobacco plant. GFP is larger than 1kb and is considered as gene of interest as well as a marker gene to be expressed and WCIMV is a +ss RNA virus.

Lough et al. do not teach precursor of the RNA amplicon contains one or more introns.

Ainley et al. teach an expression vector containing the intron 1 from maize ADH gene to enhance the steady state level of mRNA of the marker gene (the paragraph bridging columns 13-14).

Given the recognition of those of ordinary skill in the art of the value of enhance expression of gene in plant by inserting intron 1 from maize ADH gene into a marker gene as taught by Ainley et al., it would have been obvious for a person with ordinary skill in the art to modify the vector of Lough et al. by inserting intron 1 from maize ADH gene into a marker gene as taught by Ainley et al. into the GFP gene, resulting in the instant invention. One skilled in the art would have been motivated to do so given the

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teaching of Ainley et al. that such modification would enhance expression of the marker gene.

Although the combined teaching do not teach the RNA replicon being a tobamovirus, the claims 6-8 reads on any RNA virus given broad interpretation of "said RNA replicon is based on a tobamovirus" (emphasis added).

Thus the claimed invention would have been *prima facie* obvious as a whole to one of ordinary skill in the art at the time it was made, especially in the absence of evidence to the contrary.

Conclusion

No claim is allowed. However, the prior art fails to teach or fairly suggest two component system for a TMV virus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Li Zheng whose telephone number is 571-272-8031. The examiner can normally be reached on Monday through Friday 9:00 AM - 5:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anne Marie Grunberg can be reached on 571-272-0975. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Li Zheng/

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